

Round Table “Geopolitical Significance of South Stream for Serbia: New Energy Infrastructure of Europe”

The New Balkan Gas Pipelines and their Role in European Energy Security

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INSTITUTE OF ENERGY
FOR SOUTH EAST EUROPE



Presentation Outline

1. European Gas Demand
2. European Gas Imports
3. Existing and Potential New Suppliers
4. Overview of South Corridor Gas Supply Projects
5. The New Gas Pipelines Projects
 - South Stream
 - TAP
 - East Med
6. Supply Sources and Gas Transmission Capabilities

Presentation Outline (continued)

7. The 3 Myths of European Gas Supply
8. The Role of LNG
 - Imports
 - Storage (Land terminals, FSRU's)
9. Regional Interconnectors
10. Toward a Regional Gas Market
11. EU Promotes Gas Corridors via Projects of Common Interest (PCI)
12. What Next?

Myths, Truths and Half Truths

Some modern day myths about the gas pipelines which will cross the Balkans

- ❑ The South Stream will solve all the energy problems of the SE European region by providing plenty of gas at low prices
- ❑ TAP is a sustainable, viable and effective alternative to European gas supply which will lessen dependence on Russian gas
- ❑ Caspian gas resources will help decisively in diversifying European gas supply
- ❑ East Med gas will supply 1/2 of European gas demand by 2030
- ❑ Europe will soon be flooded with cheap USA gas to be imported via LNG

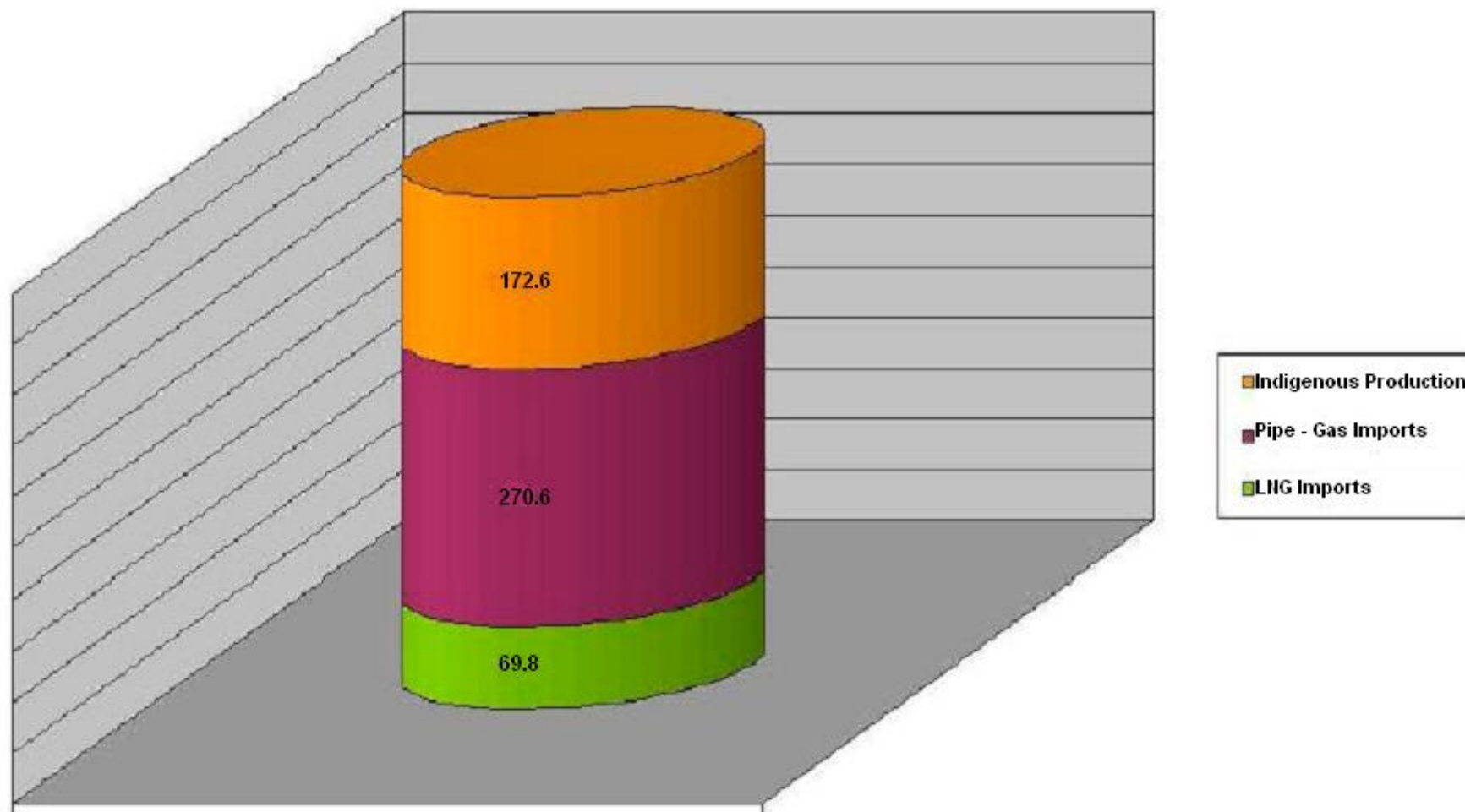
Some Truths.....

- ❑ South Stream is a major gas project which when completed will help increase many fold European energy security
- ❑ South Stream is of equal if not of greater strategic importance as Nord Stream
- ❑ South Stream is a European project with 50% of its shareholders being three of Europe's largest energy companies
- ❑ South Stream will not solve SE Europe's energy problems but like TAP will help secure additional gas supplies which are necessary for its long term economic development

Half Truths.....

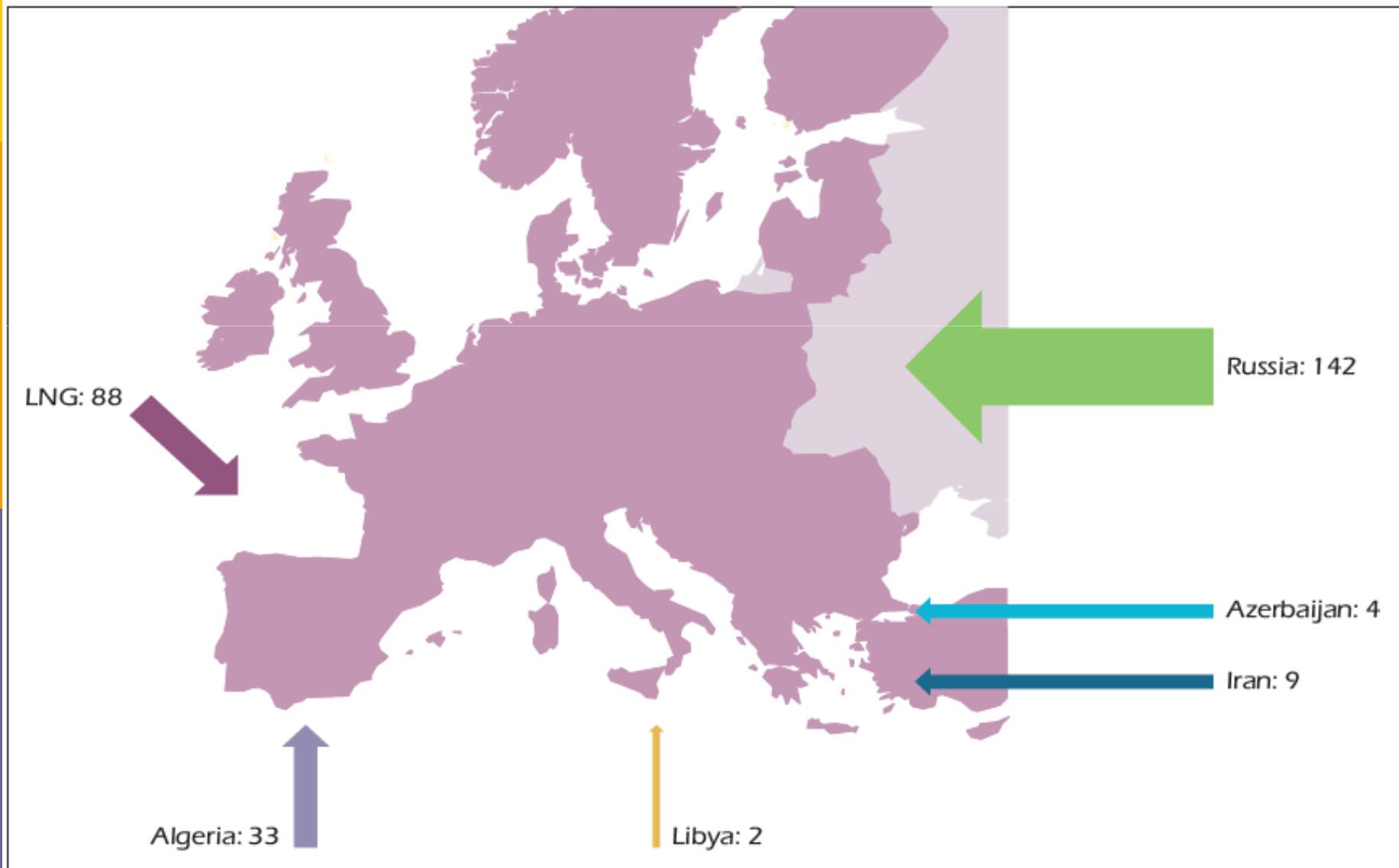
- ❑ The geopolitical importance of the Balkans will be strengthened enormously as a result of the new East-West gas pipelines
- ❑as long as Europe will continue to depend on substantial gas imports and Russia is willing to export most of its gas to the West (rather than to the East)
- ❑ Competitively priced LNG will, over the next 5-10 years claim a much larger share of the European gas market (meanwhile LNG imports are in decline)

Natural Gas Consumption in Europe in 2012, including E-27 and other European countries (in bcm)



Total European Gas Consumption in 2012: 513 bcm

Gas Imports to Europe, 2011 (bcm)



World Gas Demand by Region (bcm), 2000 - 2012

	2000	2010	2011	2011/10 (%)	2012*	2012/11 (%)
Europe	475	567	521	-8.2	513	-1.6
Americas	794	850	867	2.0	893	2.9
OECD Asia Oceania	131	198	220	11.2	229	4.0
Africa	55	105	107	2.3	113	5.8
Non-OECD Asia (excl. China)	152	283	277	-1.8	286	3.2
China	28	109	132	20.4	149	12.9
FSU/non-OECD Europe	597	681	694	2.0	677	-2.4
Latin America	94	152	149	-2.2	160	7.5
Middle East	179	370	391	5.8	407	4.2
Total	2 505	3 315	3 359	1.3	3 427	2.0

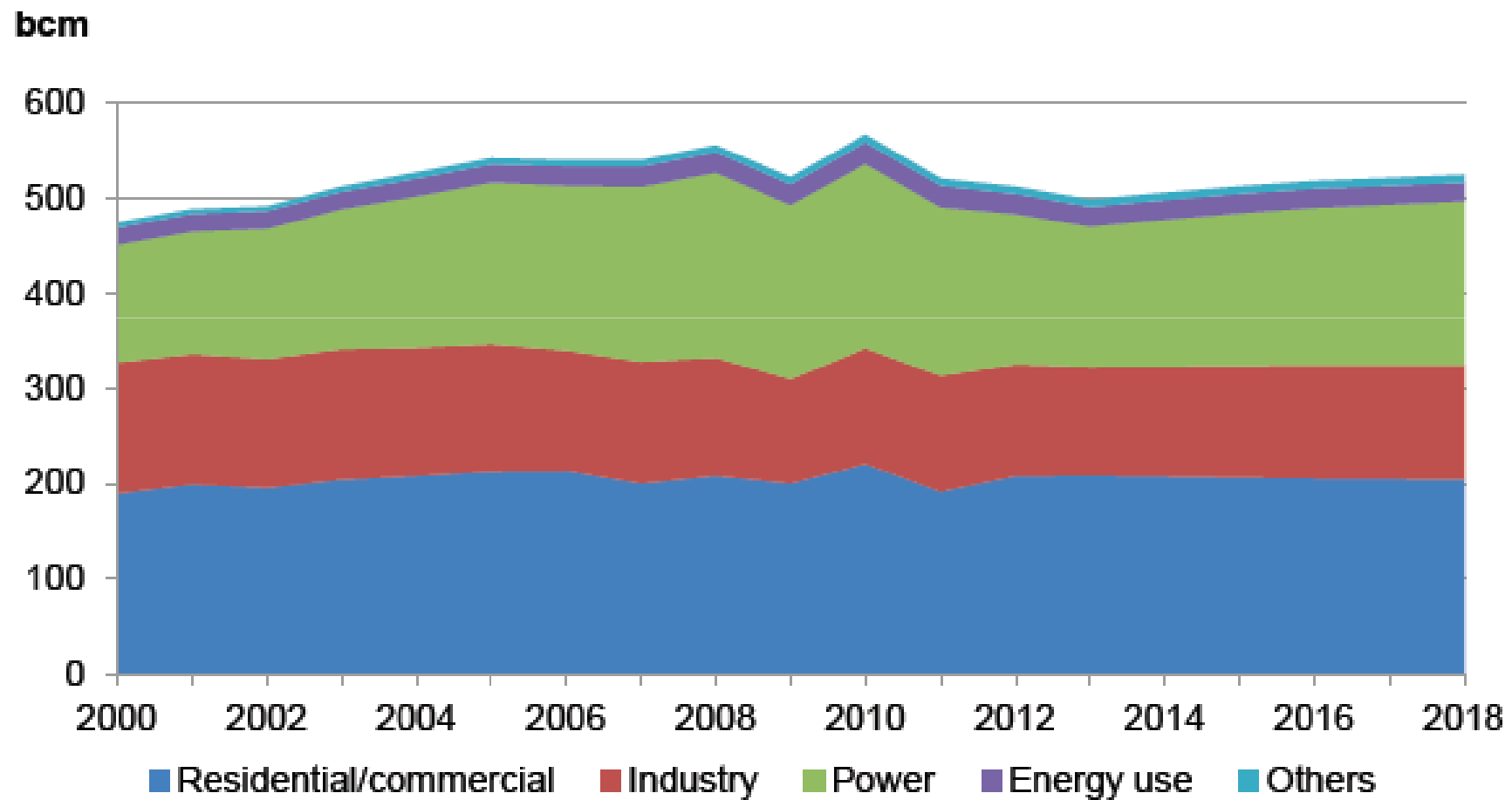
OECD Gas Demand by Country (bcm), 2011 – 2012

	2011	2012*	%		2011	2012*	%
Europe	521.1	512.6	-1.6	<i>Slovakia</i>	5.6	5.4	-4.5
<i>Austria</i>	9.4	9.0	-4.5	<i>Slovenia</i>	0.9	0.9	-5.8
<i>Belgium</i>	17.7	17.9	1.2	<i>Spain</i>	33.3	32.2	-3.3
<i>Czech Republic</i>	8.4	8.5	0.9	<i>Sweden</i>	1.3	1.1	-12.8
<i>Denmark</i>	4.2	3.9	-6.7	<i>Switzerland</i>	3.3	3.5	7.9
<i>Estonia</i>	0.6	0.7	7.8	<i>Turkey</i>	44.7	46.7	4.5
<i>Finland</i>	4.1	3.7	-10.2	<i>United Kingdom</i>	82.4	78.0	-5.4
<i>France</i>	42.8	43.9	2.6	Asia Oceania	220.0	228.7	3.5
<i>Germany</i>	86.0	86.9	1.0	<i>Australia**</i>	37.9	39.6	4.6
<i>Greece</i>	4.7	4.3	-8.4	<i>Israel***</i>	4.9	2.6	-47.9
<i>Hungary</i>	11.6	10.7	-7.2	<i>Japan**</i>	126.4	132.4	4.8
<i>Iceland</i>	0.0	0.0	NA	<i>Korea**</i>	46.5	49.5	6.5
<i>Ireland</i>	4.8	4.7	-2.5	<i>New Zealand</i>	4.3	4.6	7.3
<i>Italy</i>	77.9	75.0	-3.7	Americas	867.2	892.7	2.9
<i>Luxembourg</i>	1.2	1.2	2.3	<i>Canada</i>	103.8	103.7	-0.1
<i>Netherlands</i>	47.9	45.8	-4.2	<i>Chile</i>	5.7	5.2	-9.1
<i>Norway</i>	5.9	5.9	0.0	<i>Mexico</i>	66.7	62.4	-6.5
<i>Poland</i>	17.2	18.1	5.5	<i>United States</i>	691.0	721.4	4.4
<i>Portugal</i>	5.2	4.6	-11.3	OECD	1 608.2	1 634.0	1.6

Gas Demand, 2010 – 2018 (bcm)

	2010	2012	2014	2016	2018	2018/12 (%)
Europe	567	513	506	518	525	0.4
Americas	850	893	903	942	977	1.5
Asia Oceania	198	229	238	248	261	2.2
Africa	105	113	133	146	154	5.3
Asia	283	286	299	333	360	3.9
China*	109	149	189	237	295	12.1
FSU/non-OECD Europe	681	677	688	699	709	0.8
Latin America	152	160	166	178	190	2.9
Middle East	370	407	433	458	492	3.2
Total	3 315	3 427	3 555	3 759	3 962	2.4

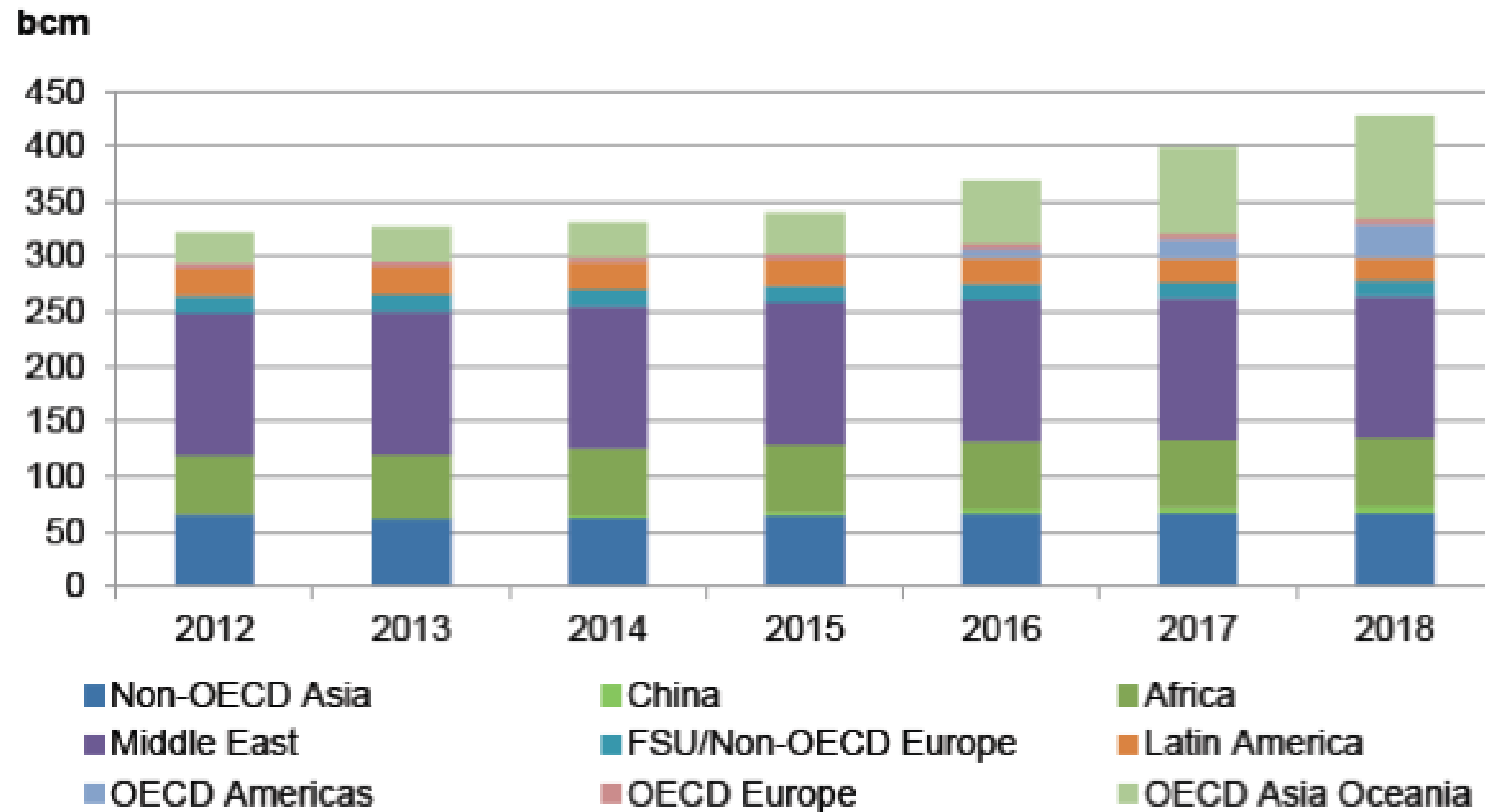
European Gas Demand, 2000 - 2018



LNG Flows in 2012 (bcm)



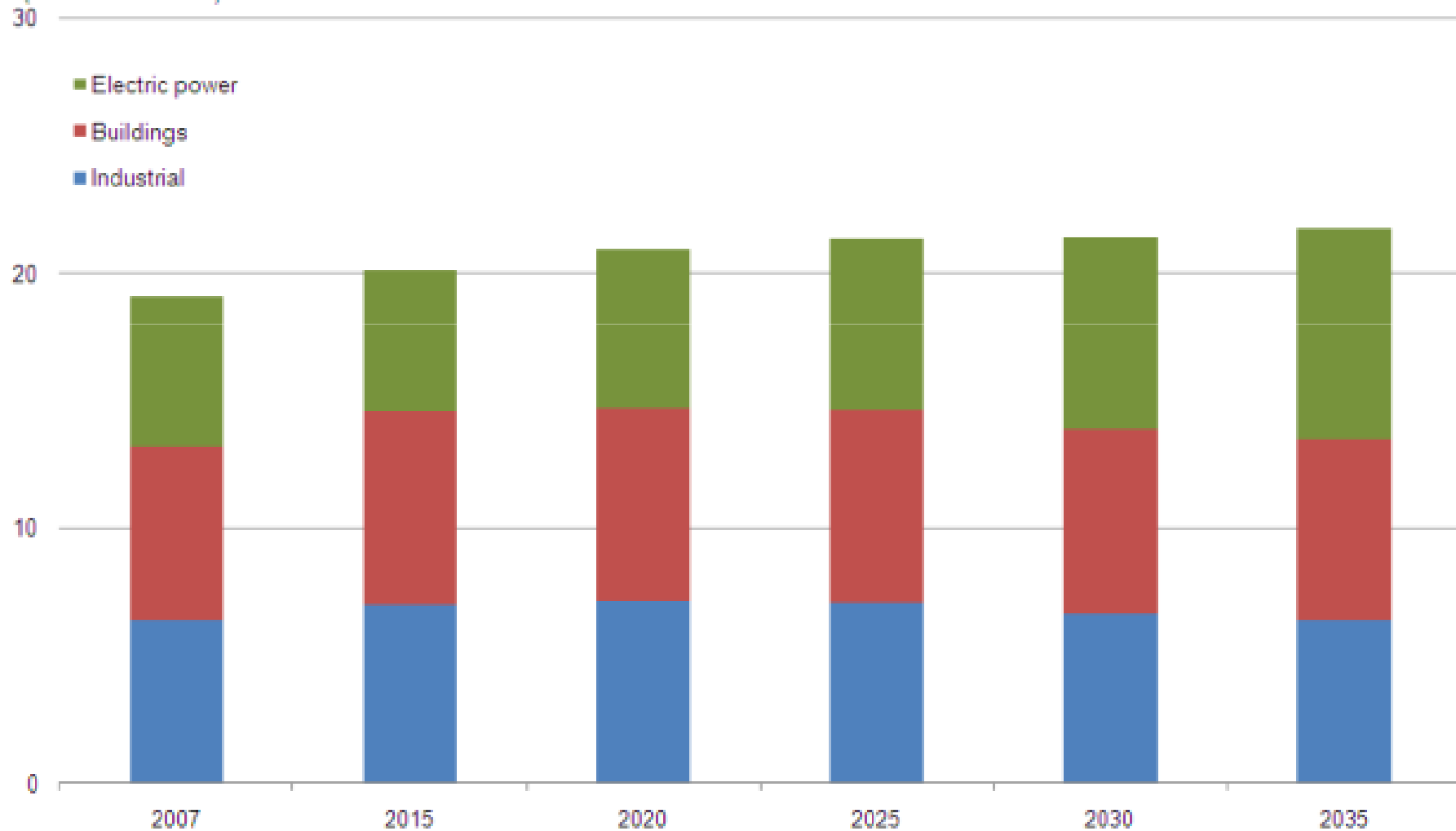
Evolution of LNG Exports, 2012 - 2018



Global and Regional Gas Demand

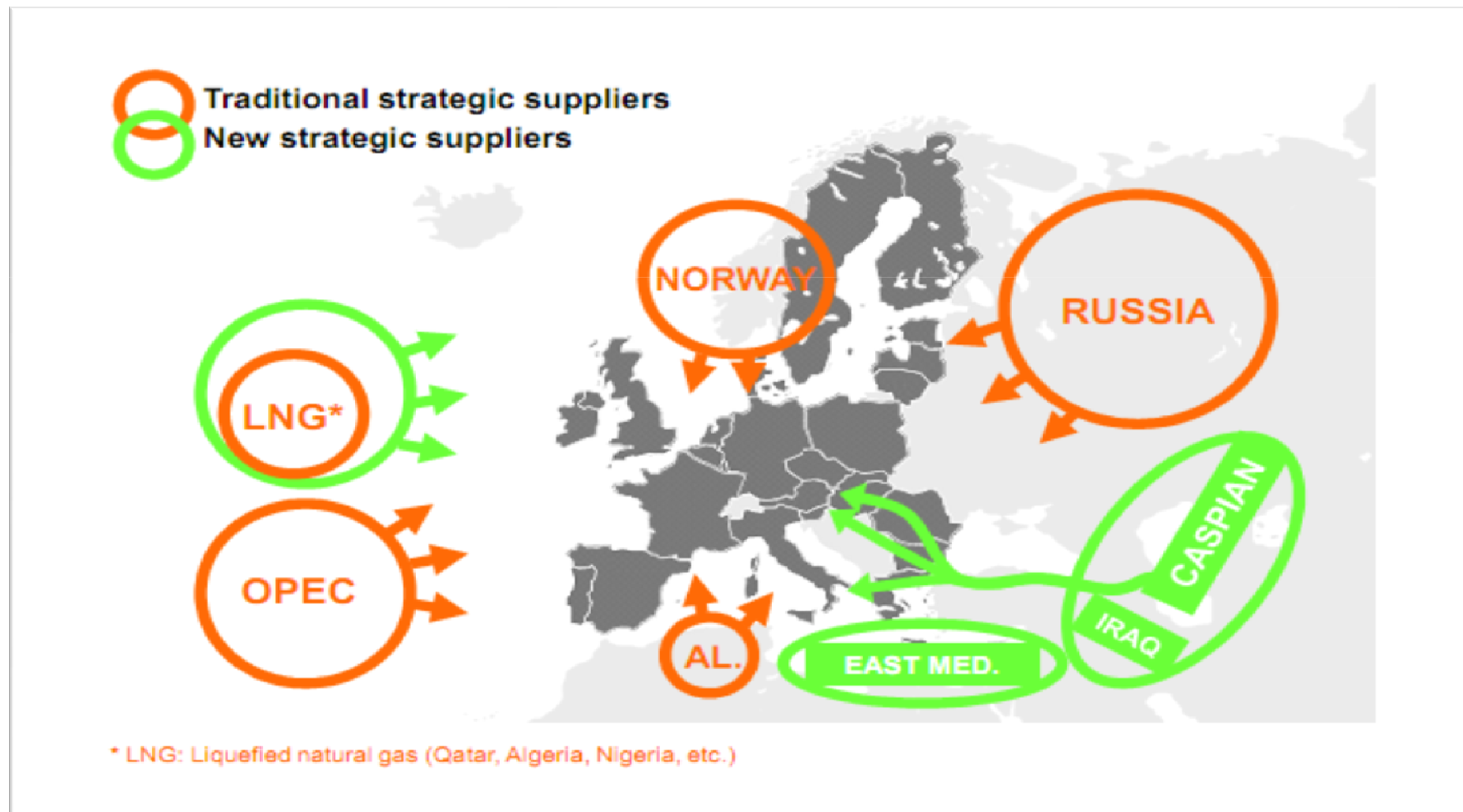
- ❑ Global gas demand is projected to grow marginally between 2012 – 2017, at 2.7% per year
- ❑ Natural gas has emerged as a dynamic energy commodity on which almost all European countries are dependent with demand becoming more robust after 2018.
- ❑ Russia is expected to keep its leading role as the main gas supplier to the European Union with South Stream expected to have a big impact on SE European gas markets when it becomes operational in 2018
- ❑ Russia will continue to control and manipulate as much as possible gas flows, originating from Central Asian countries
- ❑ Asia will be by far the fastest growing region, driven primarily by China, which will emerge as the third-largest gas user by 2013. China and South Asia will try to ensure more gas quantities from the Caspian region
- ❑ Global and regional LNG market will continue to experience strong demand growth
- ❑ The shale gas boom in US could channel some gas export quantities to Europe as early in 2015
- ❑ Azerbaijan has key role to play as supplier and prospective regional hub for European gas supply
- ❑ The TAP - TANAP pipeline system, the East Med corridor, Planned Floating LNG terminals (FSRU), Gas interconnectors (IGB, IGI, ITB), can contribute in strengthening the geopolitical role of both Greece and Turkey

Natural gas consumption in OECD Europe by end-use sector, 2007-2035
(trillion cubic feet)

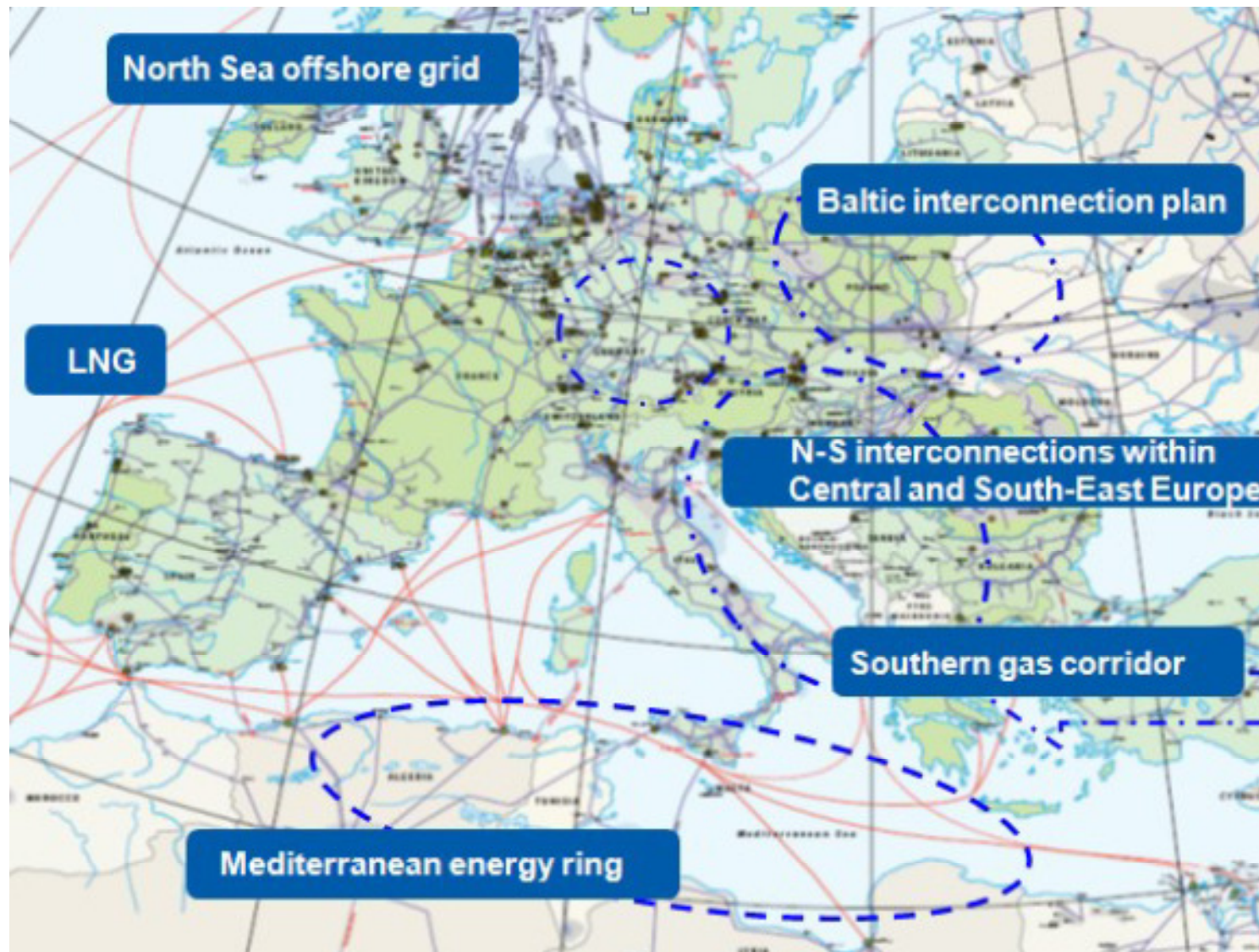


Source: EIA International Energy Statistics

Traditional and New European Gas Suppliers



Proposed European gas corridors and gas rings



Basic Characteristics of the South Corridor Projects (July 2013)

Project	Capacity (bcm/y)	Distance (kms)	Gas Origin	Estimated Project Cost (in Billion Euro)	Sponsors	Anticipated Start Up Date	Project Status
ITGI	10-16	796	Shah Deniz II	1.70	DEPA, EDISON	2017	Temporary on hold, pre FID activities completed
TAP	10 – 20	791	Shah Deniz II	1.70	EGL, STATOIL, E.ON	2017	Selected by SDC on June 27,2013, Construction to start in 2015
TANAP	16 - 24	2.000	Shah Deniz II	8 - 10	SOCAR (80%) BOTAS (20%)	2018	Construction to start in 2014
Nabucco West	10 – 23	1.300	-Shah Deniz II -Iraq -Turkmenistan	5.5	OMV, TRANSGAZ, BEH, MOL, RWE, BOTAS	2017	Cancelled
South Stream	63	2.950	-Russian Fields	16.0	Gazprom, ENI, Wintershall, EDF	2016	Construction commenced December 2012
White Stream	8 – 32	1.440	-Azerbaijan -Turkmenistan -Iraq	n.a	Not Disclosed	2016	Feasibility study stage
AGRI	5 – 8		-Azerbaijan	4 – 6	SOCAR, GOGC, ROMGAZ, MVM	2017	Feasibility study stage
SEEP	10	~1.000	-Shah Deniz II	1.0 – 1.5	BP	2017	Cancelled

The South Corridor Pipeline Projects



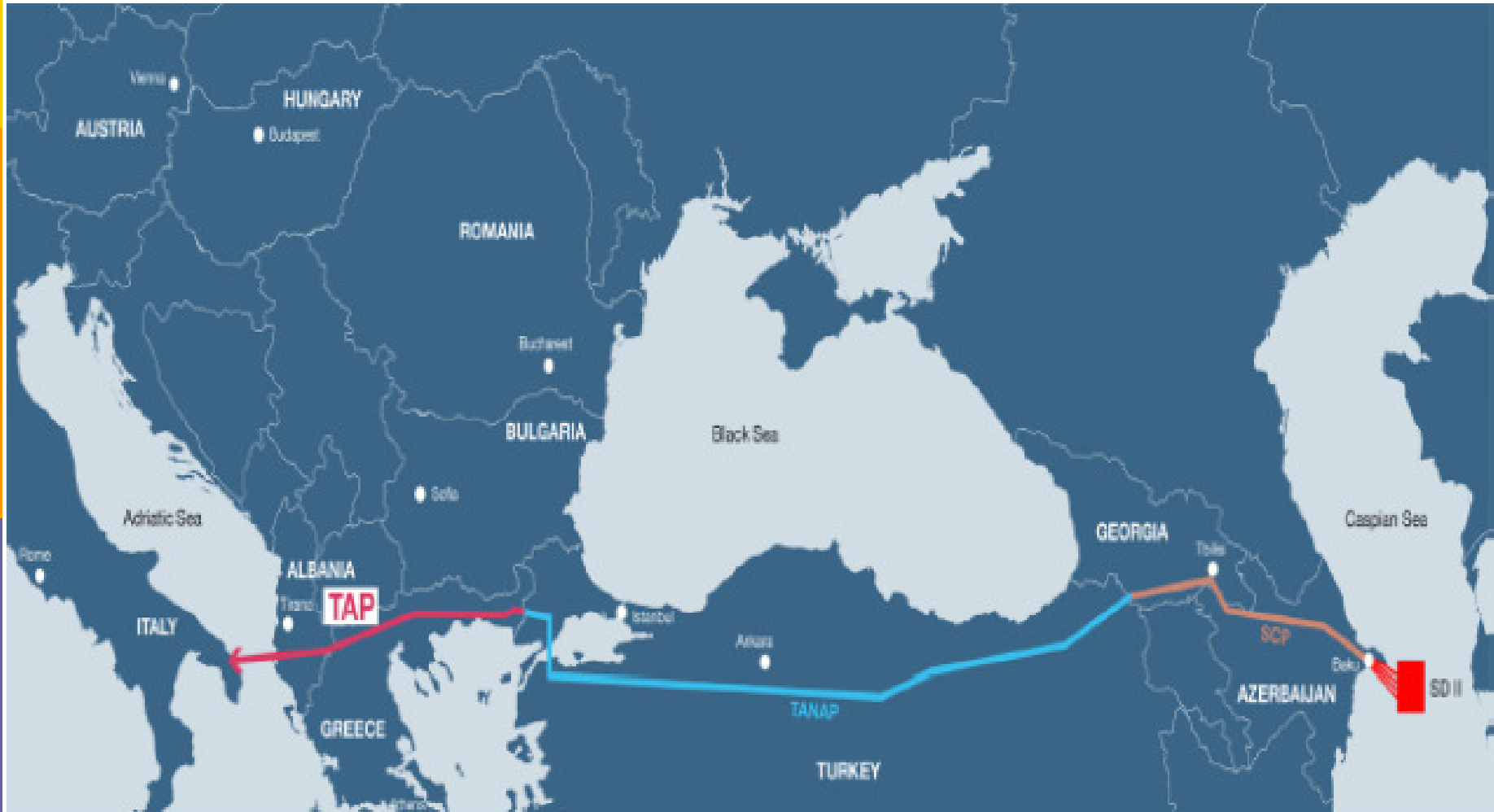
The South Stream Gas Pipeline Project



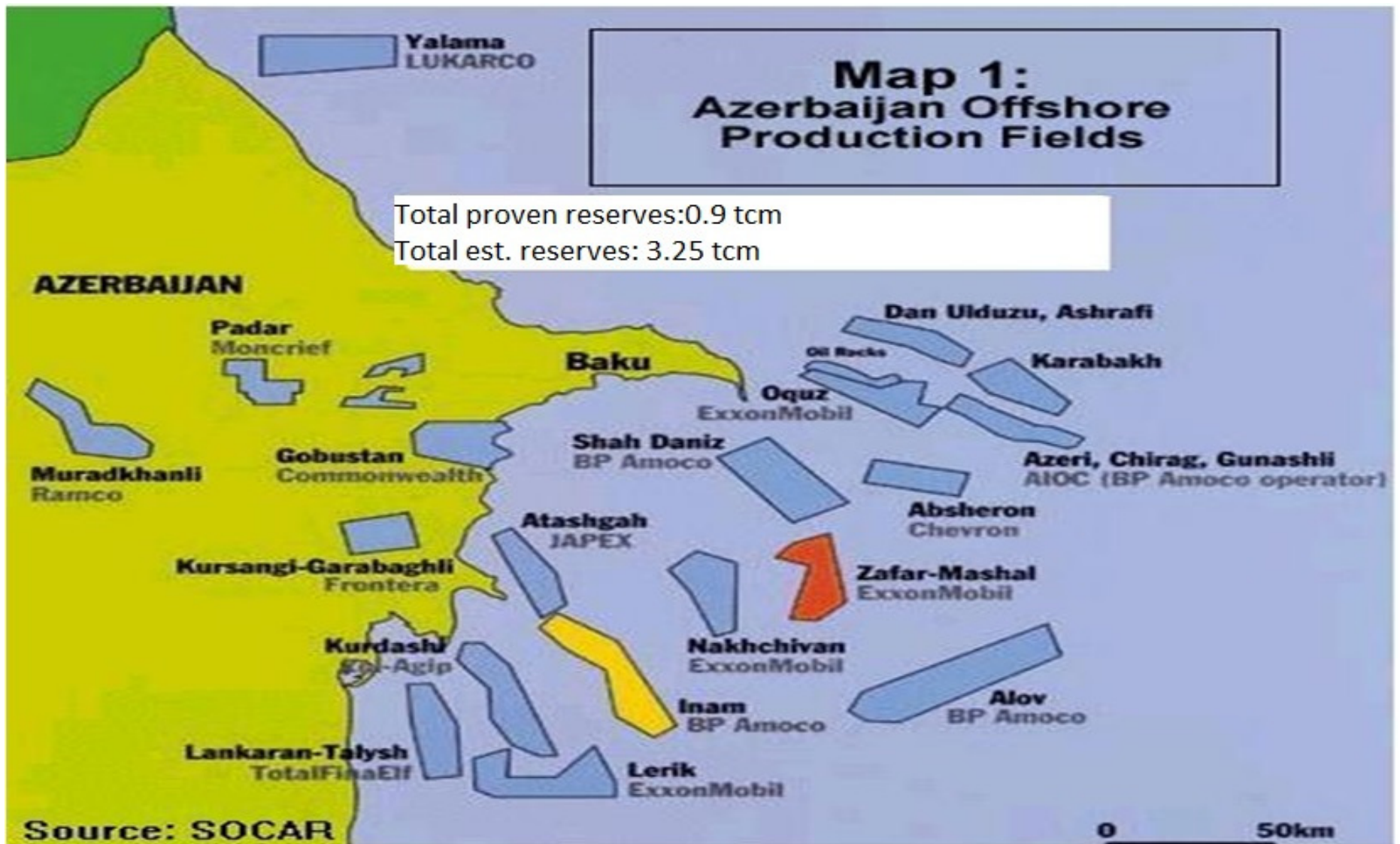
The TAP Project



TANAP and TAP System



Azerbaijan's gas resources are not the only alternative to Russian gas



Factors that will hinder future gas flow from Azerbaijan to European markets

- ❑ Currently existing fields have limited capacity
- ❑ Azerbaijan's Shah Deniz II (estimated reserves 1.2 tcm) will export 16 bcm of gas upon the development of the field. Turkey has secured 6 bcm and the rest will flow to European markets.
- ❑ Azerbaijan has the potential to produce and export more gas beyond SD II the earliest by 2025.
- ❑ Production could climb up to 39 bcm to 48 bcm by 2030, and exports could reach 27 bcm to 38 bcm by 2030; not very big numbers given European gas demand

BUT

- ❑ The availability of deepwater drilling rigs, as many more wells need to be drilled, may delay the development of new fields for many years
- ❑ Availability of transportation capacity
- ❑ Growing gas demand in Azerbaijan
- ❑ Growing gas demand in Turkey

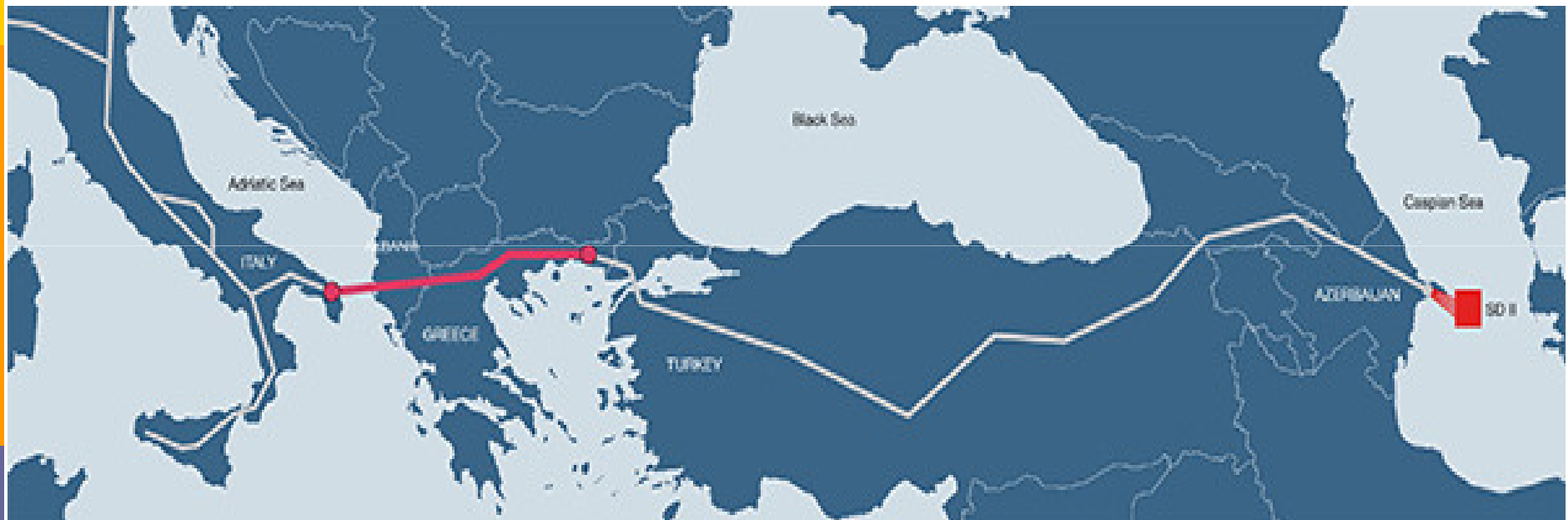
Caspian region: Rich in gas but hardly accessible

- ❑ Central Asia is estimated to hold more than 11% of world proven gas reserves, primarily in Turkmenistan, which is lagging behind Kazakhstan and Azerbaijan in attracting outside investments.

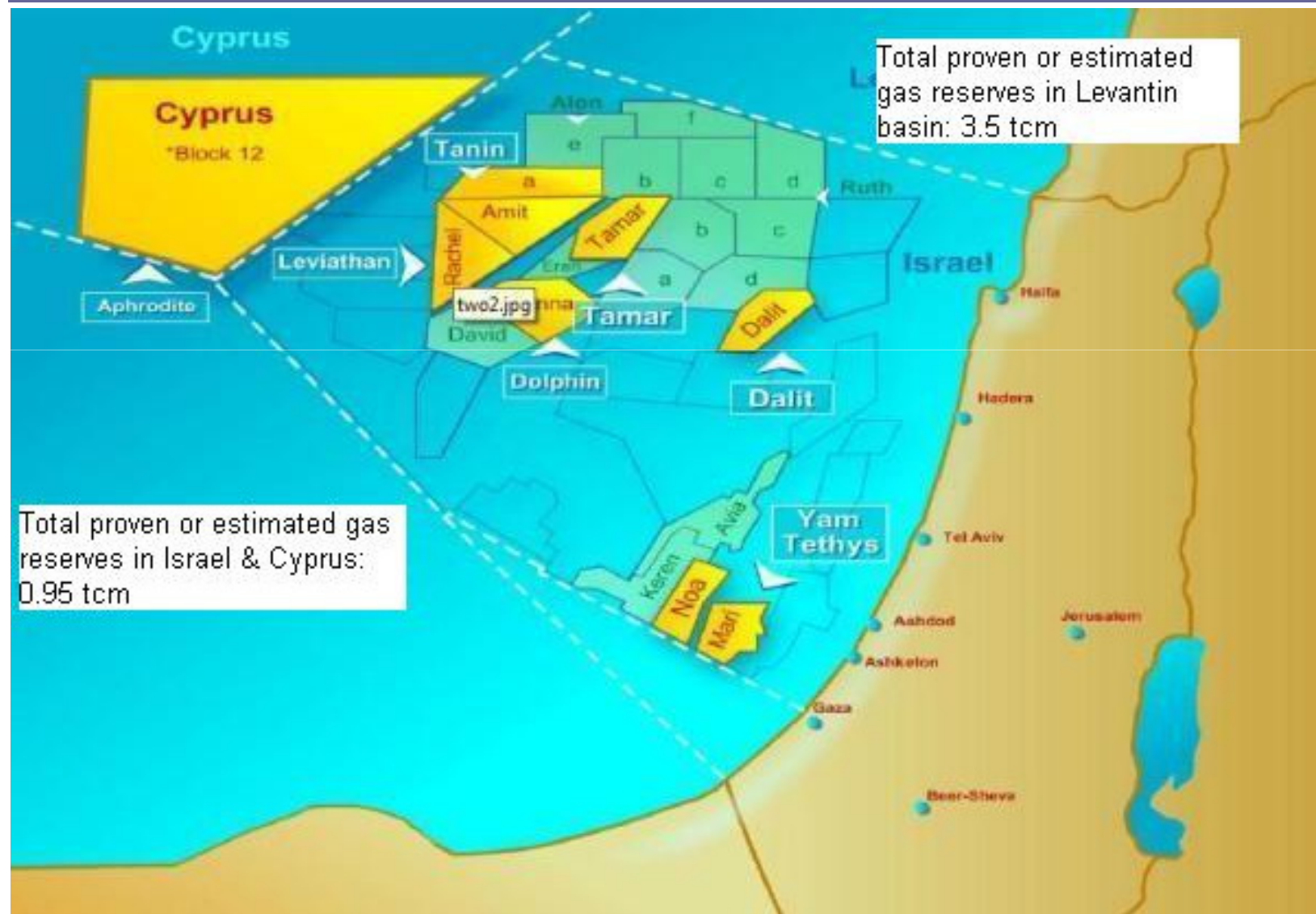
BUT

- ❑ Central Asian countries are mostly focusing on China and South Asia (e.a. TAPI project)
- ❑ China is moving swiftly to source supplies from Central Asian states of Turkmenistan, Kazakhstan and Azerbaijan
- ❑ Several political and diplomatic obstacles. Russia, Iran, Azerbaijan, Kazakhstan and Turkmenistan located clockwise around the Caspian Sea. All these actors and their behaviour made the scope of Caspian more complex and complicated.
- ❑ Russian influence - Caucasus has been an integral part of the Russian sphere for 160 years
- ❑ As more gas flows from Asia to Europe Turkey's role as a transit country is reinforced
- ❑ Because of Turkey's growing gas demand (10% growth) more gas from central Asia will flow to this country

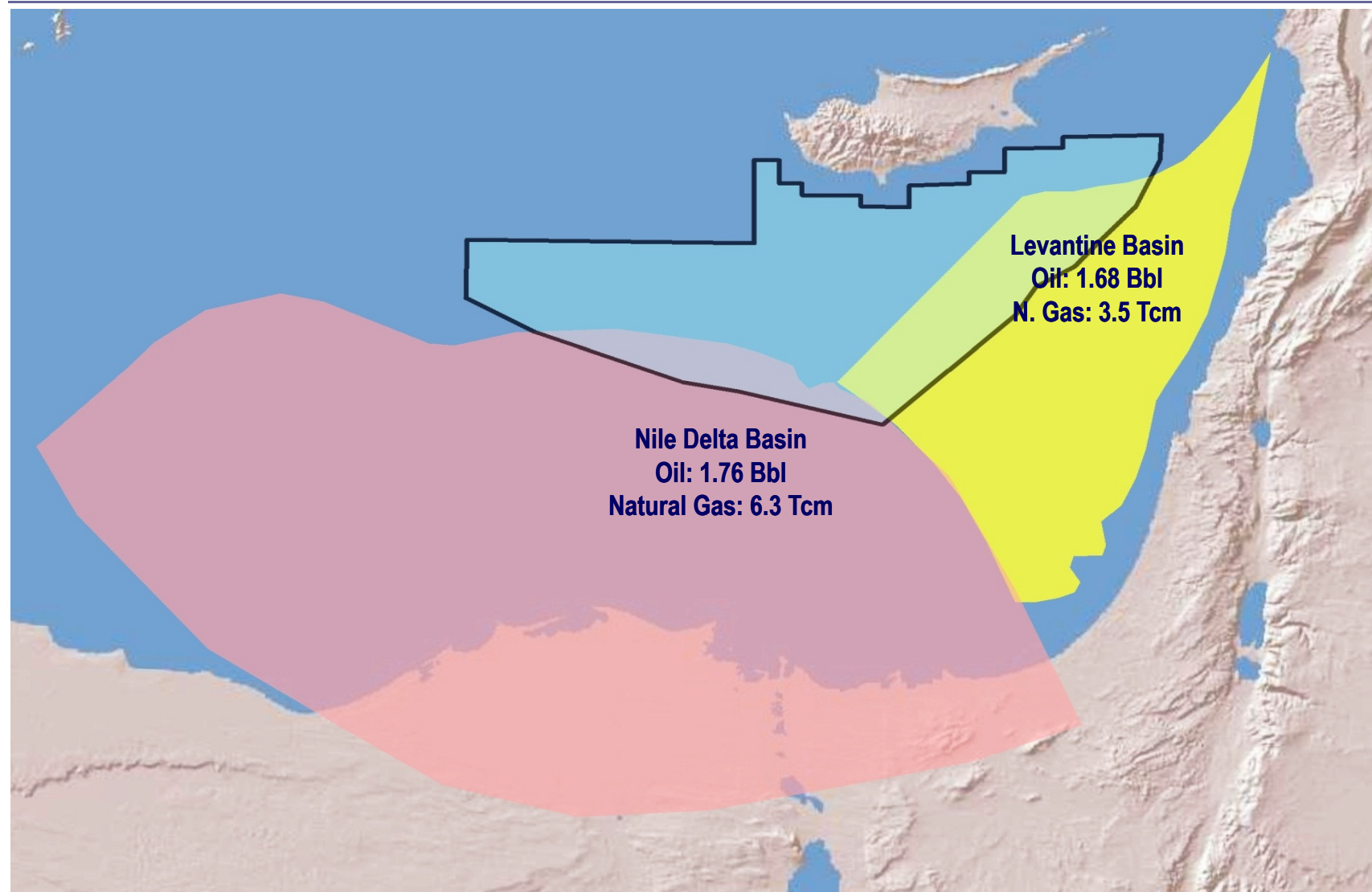
TANAP – TAP route is expensive and will provide limited diversification to Russian gas supply



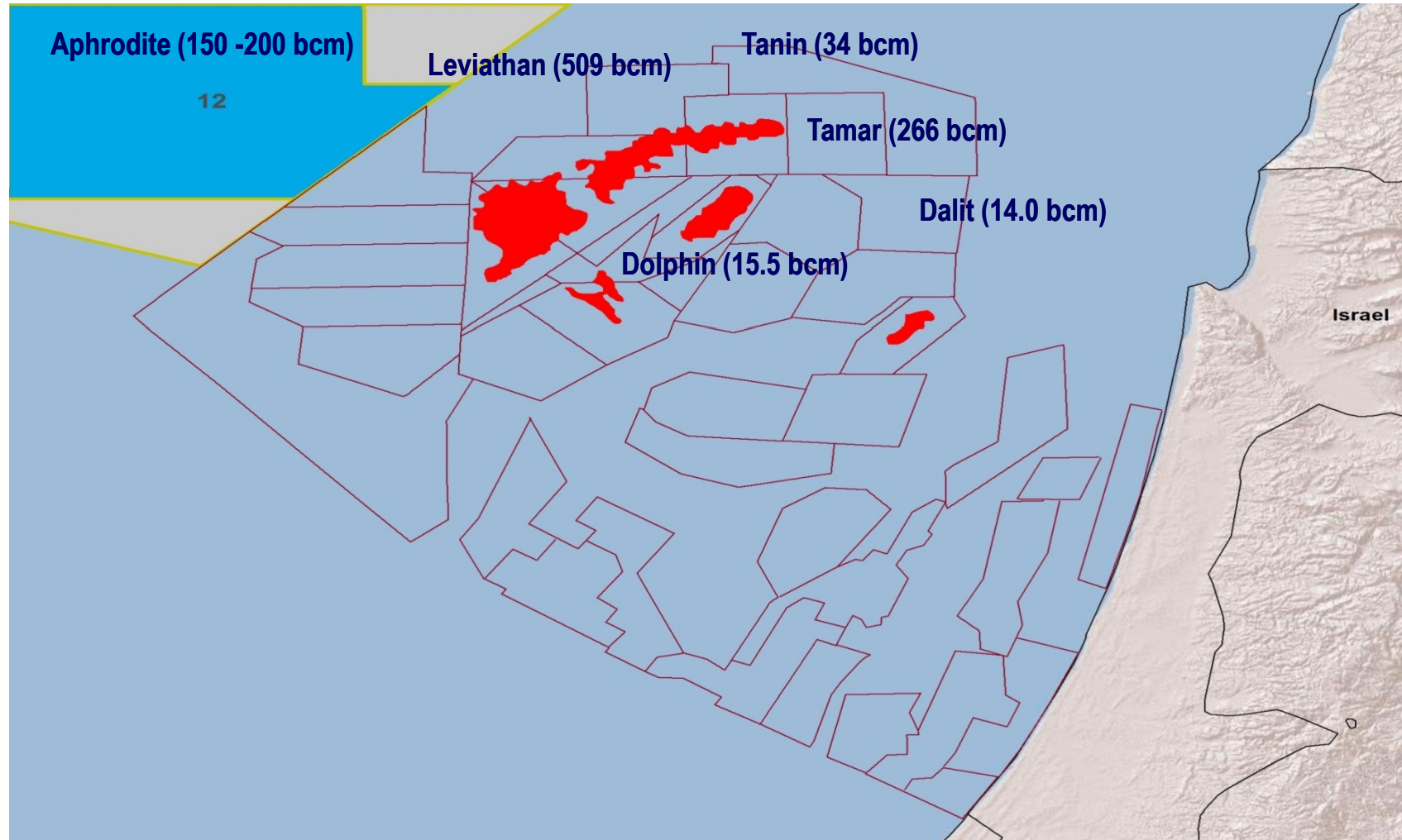
The Levantine basin – An alternative gas supplier

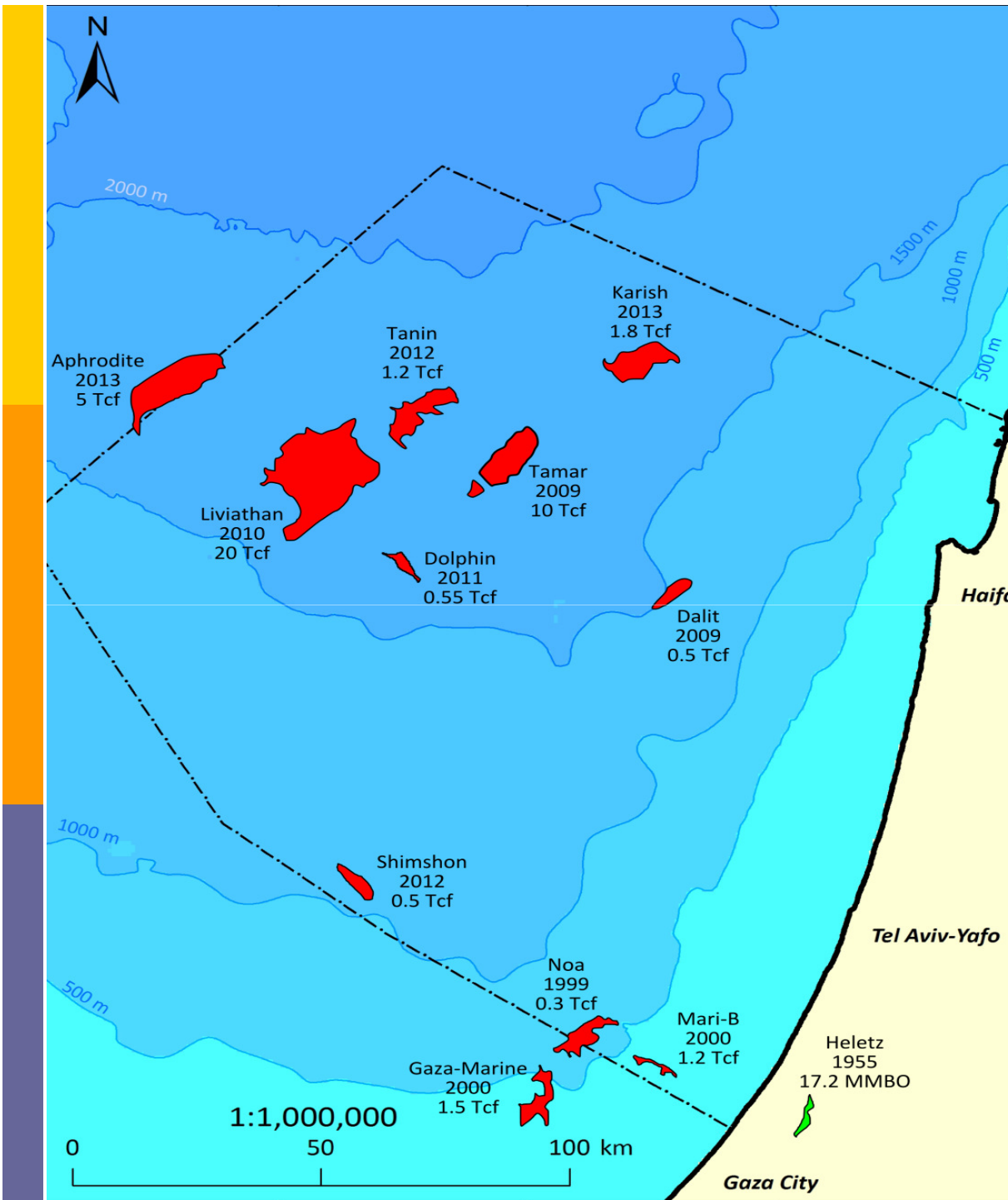


South East Mediterranean estimated gas and oil reserves



Total Gas Reserves in Israel (838.0 bcm) and Cyprus (150 – 200 bcm)





Proven Natural Gas Reserves in Israel and Cyprus

CYPRUS A

LEVIATHAN

TAMAR

DALIT

NW

SE

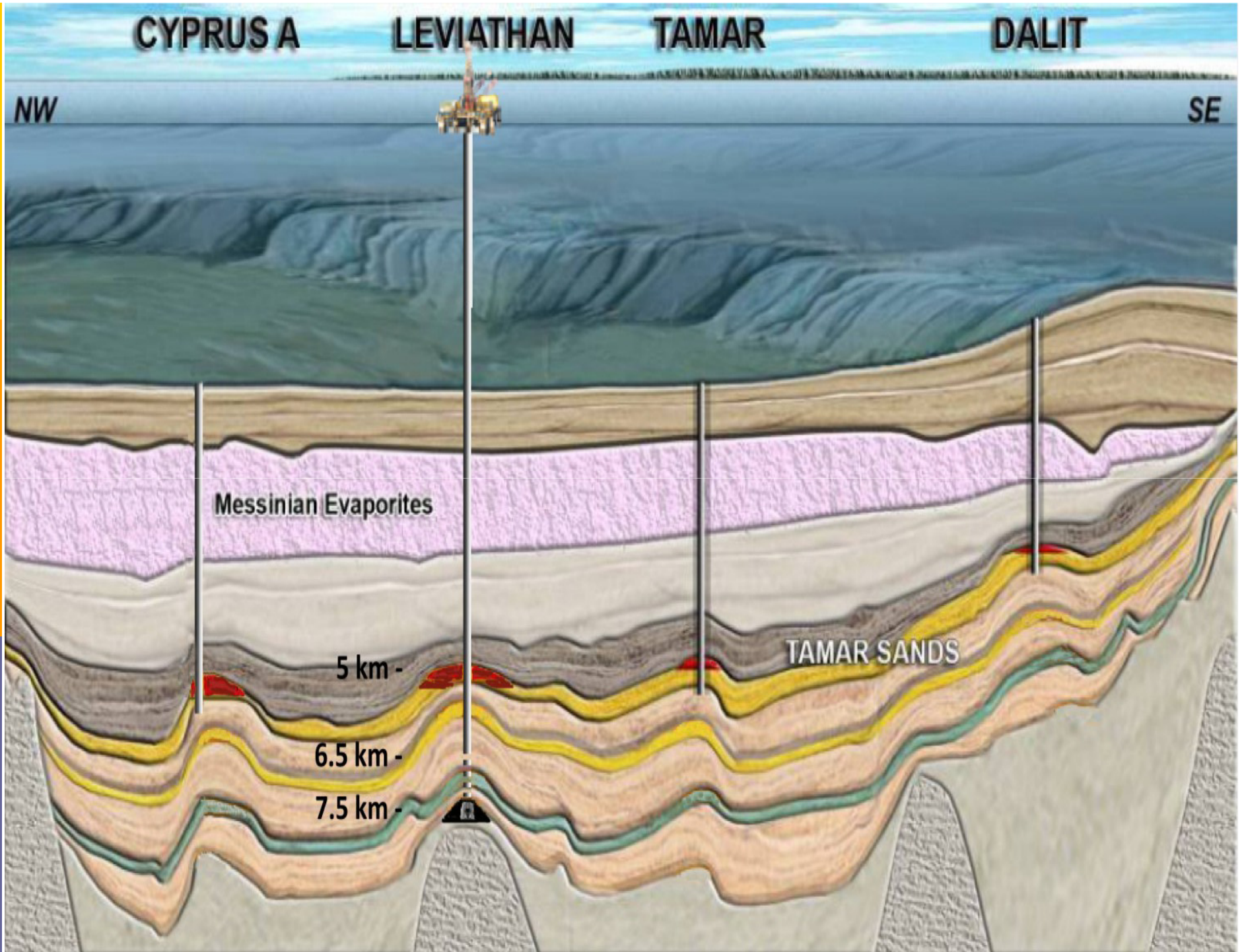
Messinian Evaporites

TAMAR SANDS

5 km -

6.5 km -

7.5 km -



2010
The discovery well
Leviathan – 1





Several export options from Leviathan gas field and tomorrow from Cyprus's fields

The East Med Pipeline Project



Eastern Mediterranean gas Reserves

Tamar, Leviathan and Block 12 are three of the top five world's largest discoveries of the decade.

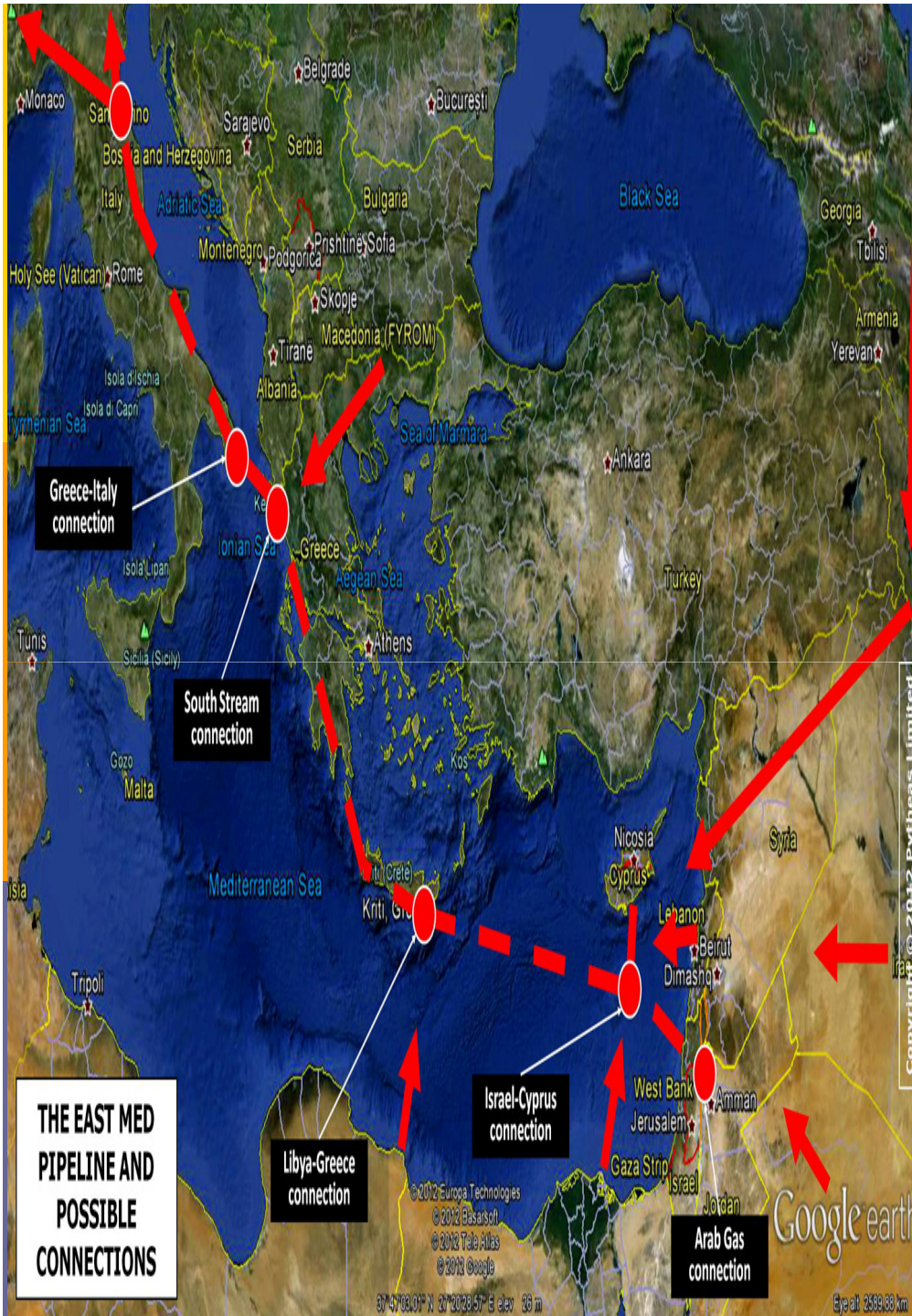
Tamar	2009	Israel	257bcm
Leviathan	2010	Israel	481bcm
Block 12	2011	Cyprus	198bcm

According to the USGS (United States Geological Survey) total reserves at the Levantine basin could be three times more than what has already been discovered.

And there may be even more gas in Greece south of Crete.

Estimates are that more than 16 bcma will be exported, which necessitates exports both in LNG form and through a pipeline.





ALEXANDROUPOLIS LNG INGS - A NEW ENERGY GATEWAY TO EUROPE



The East Med Energy Corridor to Include also Electricity Interconnector (EuroAsia Interconnector)



The Importance of East Med Gas Supply

- ❑ An important paradigm shift is in progress as major oil and gas reserves are for the first time being developed outside the OPEC – Arab embrace, yet within the Middle East space
- ❑ East Med's proximity to European continent to provide relatively easy access to energy supplies
- ❑ Development of East Med hydrocarbon resources in line with stated EU energy policy of diversifying energy supplies in an effort to lessen dependence on Russian gas
- ❑ East Med oil and gas reserves shall strengthen European hydrocarbon resources as Cyprus and Greece are full EU members and Israel belongs to the European Economic Area
- ❑ Greece is likely to emerge as the next potential oil and gas region in SE Europe, complementing Israel and Cyprus

East Med Gas Supply – Geopolitical Implications (I)

- Can East Med be seen as a threat to Russian gas dominance?
- Is Turkey going to claim exclusive rights for East Med gas transmission?
 - (i) Not necessarily since Turkey is primarily interested to cover its own growing gas needs from East Med gas supplies
 - (ii) A brand new gas route will have to be built in addition to TANAP to take the extra gas from the East Med region via the Turkish mainland through TAP and/or through a new East Balkan pipeline to Europe. This requires major investments in gas transit routes but with uncertain quantities at this stage

East Med Gas Supply – Geopolitical Implications (II)

- ❑ Can Greece seize the opportunity to become a vital new gas supply route to Europe? Not likely since Greece, geographically may be in a privileged position but practically the country is bankrupt with a weak government which is to become even weaker in the months ahead and therefore incapable of long term planning. It is no accident that none of recent major energy projects has been realized despite firm EU support and bilateral agreements, i.e. Burgas – Alexandroupolis oil pipeline, the ITGI, gas pipeline, the Helios Project, Oil and gas Exploration in West Greece, Aegean islands electricity interconnections etc.
- ❑ Exploration and development of East Med gas reserves should be seen as an opportunity for increased regional co-operation and hence contribution to regional political stability
- ❑ In a Middle East which has been in turmoil over the past two years East Med oil and gas exploration offers an opportunity for stability and growth with several countries benefiting from impending investments (i.e. Greece, Turkey, Syria, Lebanon, Israel, Egypt, Cyprus)

Projects of Common Interest (PCI)

- ❑ The Trans Anatolia Natural Gas Pipe line"(TANAP),
- ❑ Expansion of the South Caucasus Pipeline (SCP)
- ❑ The "Trans Caspian Gas Pipeline" (TCP)
- ❑ Gas pipeline from Greece to Italy via Albania and the Adriatic Sea, currently known as the "Trans Adriatic Pipeline" (TAP)
- ❑ Gas pipeline from Greece to Italy via the Adriatic Sea, currently known as the "Interconnector Turkey – Greece - Italy" (ITGI)
- ❑ Gas pipeline from Bulgaria to Austria via Romania and Hungary
- ❑ Gas Interconnection Greece – Bulgaria, currently known as "IGB", between Komotini (EL) – Stara Zagora (BG)
- ❑ Necessary rehabilitation, modernization and expansion of the Bulgarian transmission system PCI Gas Interconnection Bulgaria – Serbia, currently known as "IBS"

Projects of Common Interest (PCI) - continued

- ❑ Construction of new gas storage facility on the territory of Bulgaria
- ❑ South Kavala gas storage in Greece
- ❑ Independent Natural Gas System LNG Greece
- ❑ Aegean LNG import terminal
- ❑ Depomures gas storage in Romania
- ❑ Interconnector between Turkey and Bulgaria with a minimum capacity of 3 bcm/a, currently known as "ITB"
- ❑ LNG Regasification vessel in Krk (Croatia)
- ❑ Gas pipeline Omišalj (Cr) - Casal Borsetti (It)
- ❑ Ionian Adriatic Pipeline "IAP" (Fieri – Split)
- ❑ Gas Pipeline from offshore Cyprus to Greece mainland via Crete known as "East Med Pipeline"
- ❑ LNG storage located in Cyprus currently known as the "Mediterranean Gas Storage"

What Next

In Europe

- ❑ The EU and the Brussels bureaucracy will have to accept South Stream as a major European project and hence remove once and for all the various artificial objections which they are raising
- ❑ Russia backed by its European partners should seek to establish a special agreement with the EU to safeguard South Stream's construction and operation, with specific reference to all agreements signed so far with all the host countries
- ❑ The EU should try over the next few years to develop a cohesive energy policy (which is currently lacking) with energy security as one of its main pillars.

What Next

In SE Europe

- ❑ As sizable gas volumes will be entering SE Europe's system by 2020 the case for gas price competition will become much stronger
- ❑ Market liquidity is seen as top priority and can only be realized by completing the various country interconnectors (e.g. IGB, ITB, IBR etc.)
- ❑ The emergence of a Gas Price Hub in SE Europe will help develop gas price competition and hence improve market conditions (IENE is currently preparing comprehensive proposals to this end)



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**Thank you for
your attention**

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